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Our Case No. 12576-4139

Client Ref. No. F03-392US001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Jae-Deok Park

Serial No. 10/813,797

Filing Date: March 30, 2004

For: Liquid Crystal Display Device and Method
Of Fabricating the Same

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) Examiner: Dung T. Nguyen
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) Group Art Unit No.: 2871
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Response to Office Action

Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated February 22, 2006, please amend the application as follows:

A listing of the Claims begin on page 2 of this paper.

Remarks begin on page 10 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings of claims in the application.

Listing of the Claims:

This listing of claims will replace all previous versions of the claims:

1. (Currently Amended) A transfective liquid crystal display device, comprising:
 - a first substrate including a transmissive pixel and a reflective pixel;
 - a plurality of gate lines and a plurality of data lines on the first substrate, the gate and data lines crossing each other to define a pixel region, the transmissive and reflective pixels correspond to respective pixel regions;
 - a thin film transistor at each crossing of the gate and data lines;
 - a first passivation layer covering the thin film transistor, the first passivation layer having a transmissive hole in the transmissive pixel;
 - a first reflector on the first passivation layer in the reflective pixel;
 - a second passivation layer in the transmissive pixel;
 - a pixel electrode on the second passivation layer;
 - a second substrate spaced apart from and facing the first substrate;
 - a color filter layer on an inner surface of the second substrate, the color filter layer containing red (R), green (G) and blue (B) sub color filters, each sub color filter corresponding to one of the pixel regions; and
 - a liquid crystal layer between the first and second substrates; and
 - a second reflector between the first and second passivation layers in the transmissive pixel, the second reflector covering sides of the first passivation layer corresponding to the transmissive hole,
 - wherein the second reflector overlaps the data lines.

2 – 3. (Cancelled)

4. (Original) The device according to claim 1, wherein the thin film transistor has a bottom gate structure, which includes a gate electrode, a gate insulating layer on the gate electrode, an active layer of amorphous silicon on the

gate insulating layer, an ohmic contact layer of doped amorphous silicon on the active layer, source and drain electrodes on the ohmic contact layer.

5. (Withdrawn) The device according to claim 1, wherein the thin film transistor has a top gate structure, which includes a semiconductor layer of polycrystalline silicon having an active area and source and drain areas, a gate insulating layer on the semiconductor layer, a gate electrode on the gate insulating layer over the active area, an inter insulating layer on the gate electrode, and source and drain electrodes on the inter insulating layer, the source and drain electrodes are connected to the source and drain areas, respectively.

6. (Original) The device according to claim 1, wherein three pixel regions of R, G and B extending in a first direction parallel with the gate lines constitute one dot.

7. (Original) The device according to claim 6, wherein the transmissive pixel and the reflective pixel are alternately arranged in the first direction.

8. (Original) The device according to claim 7, wherein the dot includes one transmissive pixel and two reflective pixels.

9. (Original) The device according to claim 7, wherein the dot includes two transmissive pixels and one reflective pixel.

10. (Withdrawn) The device according to claim 6, wherein the dots include a transmissive dot having three transmissive pixels and a reflective dot having three reflective pixels.

11. (Withdrawn) The device according to claim 10, wherein the transmissive and reflective dots are alternately arranged in the first direction.

12. (Withdrawn) The device according to claim 11, wherein the transmissive and reflective dots are alternately arranged in a second direction orthogonal to the first direction.

13. (Withdrawn) The device according to claim 7, wherein the transmissive and reflective pixels are alternately arranged in a second direction orthogonal to the first direction.

14. (Original) The device according to claim 1, wherein the second passivation layer is disposed on the first reflector.

15. (Currently Amended) The device according to claim 21, wherein the first passivation layer has an uneven surface and the first reflector formed on the uneven surface of the first passivation layer is uneven.

16. (Original) The device according to claim 15, wherein the first passivation layer has an even surface between the first reflector and the second reflector and on which the first reflector is not formed.

17. (Original) The device according to claim 16, wherein the even surface of the first passivation layer essentially corresponds to an area above which the data lines are formed.

18. (Original) The device according to claim 17, wherein the second passivation layer covers at least a portion of the even surface.

19. (Original) The device according to claim 15, wherein the second passivation layer separates the second reflector from the first reflector.

20. (Original) The device according to claim 15, wherein no portion of the first passivation over which the second reflector is formed has an uneven surface.

21. (Original) The device according to claim 1, wherein the transmissive hole is formed in an area adjacent to the transistor in a direction parallel with the gate lines.

22. (Original) The device according to claim 1, wherein the pixel electrode is formed in the reflective pixel.

23. (Original) The device according to claim 22, wherein the pixel electrode is connected to the thin film transistor.

24. (Withdrawn) A transfective liquid crystal display device, comprising:
a first substrate including a transmissive pixel and a reflective pixel;
a plurality of gate lines and a plurality of data lines on the first substrate, the gate and data lines crossing each other to define a pixel region, the transmissive pixel and the reflective pixel corresponding to respective pixel regions;
a thin film transistor at each crossing of the gate and data lines;
a first passivation layer covering the thin film transistor, the first passivation layer having a transmissive hole in the transmissive pixel;
a reflective electrode on the first passivation layer in the reflective pixel, the reflective electrode connected to the thin film transistor;
a pixel electrode disposed in the transmissive pixel and connected to the thin film transistor;
a second substrate spaced apart from and facing the first substrate;
a color filter layer on an inner surface of the second substrate, the color filter layer containing red (R), green (G) and blue (B) sub color filters, each sub color filter corresponding to one of the pixel regions; and
a liquid crystal layer between the first and second substrates.

25. (Withdrawn) The device according to claim 24, further comprising a second passivation layer disposed in the transmissive pixel on which the pixel electrode is disposed and a reflector between the first and second passivation layers in the transmissive pixel, the reflector covering sides of the first passivation layer corresponding to the transmissive hole.

26. (Withdrawn) The device according to claim 25, wherein the reflector overlaps the data lines.

27. (Withdrawn) The device according to claim 25, wherein the second passivation layer does not cover the reflective electrode.

28. (Withdrawn) The device according to claim 27, wherein the second passivation layer terminates before extending into the reflective pixel.

29. (Withdrawn) The device according to claim 25, wherein the first passivation layer has an uneven surface and the reflective electrode formed on the uneven surface of the first passivation layer is uneven.

30. (Withdrawn) The device according to claim 29, wherein the first passivation layer has an even surface between the reflective electrode and the reflector on which the reflective electrode is not formed.

31. (Withdrawn) The device according to claim 30, wherein the even surface of the first passivation layer essentially corresponds to an area above which the data lines are formed.

32. (Withdrawn) The device according to claim 31, wherein the second passivation layer covers at least a portion of the even surface.

33. (Withdrawn) The device according to claim 31, wherein the pixel electrode terminates before extending substantially into an area over the portion of the even surface.

34. (Withdrawn) The device according to claim 25, wherein the second passivation layer covers the reflector and separates the reflector from the reflective electrode.

35. (Withdrawn) The device according to claim 25, wherein no portion of the first passivation over which the reflector is formed has an uneven surface.

36. (Withdrawn) The device according to claim 24, wherein the thin film transistor has a bottom gate structure, which includes a gate electrode, a gate insulating layer on the gate electrode, an active layer of amorphous silicon on the gate insulating layer, an ohmic contact layer of doped amorphous silicon on the active layer, source and drain electrodes on the ohmic contact layer.

37. (Withdrawn) The device according to claim 24, wherein the thin film transistor has a top gate structure, which includes a semiconductor layer of polycrystalline silicon having an active area and source and drain areas, a gate insulating layer on the semiconductor layer, a gate electrode on the gate insulating layer over the active area, an inter insulating layer on the gate electrode, and source and drain electrodes on the inter insulating layer, the source and drain electrodes are connected to the source and drain areas, respectively.

38. (Withdrawn) The device according to claim 24, wherein three pixel regions of R, G and B extending in a first direction parallel with the gate lines constitute one dot.

39. (Withdrawn) The device according to claim 38, wherein the transmissive pixel and the reflective pixel are alternately arranged in the first direction.

40. (Withdrawn) The device according to claim 39, wherein the dot includes one transmissive pixel and two reflective pixels.

41. (Withdrawn) The device according to claim 39, wherein the dot includes two transmissive pixels and one reflective pixel.

42. (Withdrawn) The device according to claim 38, wherein the dots include a transmissive dot having three transmissive pixels and a reflective dot having three reflective pixels.

43. (Withdrawn) The device according to claim 42, wherein the transmissive dot and the reflective dot are alternately arranged in the first direction.

44. (Withdrawn) The device according to claim 43, wherein the transmissive and reflective dots are alternately arranged in a second direction orthogonal to the first direction.

45. (Withdrawn) The device according to claim 24, wherein the transmissive hole is formed in an area adjacent to the transistor in a direction parallel with the gate lines.

46. (Withdrawn) A transfective liquid crystal display device, comprising:
opposing first and second substrates;
a liquid crystal layer between the first and second substrates;
transmissive and reflective pixels formed on the first substrate, the transmissive and reflective pixels separated by intersecting gate and data lines and alternating along at least one direction parallel with the gate or data lines;

a color filter layer containing red (R), green (G) and blue (B) sub color filters, each of which corresponds to one of the transmissive and reflective pixels; and

each of the transmissive and reflective pixels containing a thin film transistor covered by a first passivation layer and a first reflector disposed on the first passivation layer over the thin film transistor;

wherein the transmissive pixel contains a second passivation layer on which a pixel electrode is disposed, the first passivation layer contains a hole, and a second reflector that covers sides of the hole is disposed between the first and second passivation layers, and

in each of the transmissive and reflective pixels, the pixel electrode or first reflector is connected to the transistor.

47. (Withdrawn) The device according to claim 46, wherein, in each of the transmissive and reflective pixels, the second passivation layer is disposed on the first reflector and the pixel electrode, which is disposed over the first reflector, is connected to the transistor.

48. (Withdrawn) The device according to claim 46, wherein the first passivation layer has an uneven surface and the first reflector formed on the uneven surface of the first passivation layer is uneven.

49. (Withdrawn) The device according to claim 48, wherein the first passivation layer has an even surface between the first reflector and the second reflector and on which the first reflector is not formed and the second passivation layer covers at least a portion of the even surface.

50. (Withdrawn) The device according to claim 49, wherein the second passivation layer separates the second reflector from the first reflector.

51. (Withdrawn) The device according to claim 50, wherein no portion of the first passivation over which the first reflector is formed has an uneven surface.

52. (Withdrawn) The device according to claim 46, wherein the transmissive hole is formed in an area adjacent to the transistor in a direction parallel with the gate lines.

53. (Withdrawn) The device according to claim 46, wherein the first reflector is connected to the thin film transistor.

REMARKS

In view of the preceding amendments and the comments which follow, and pursuant to 37 C.F.R. § 1.111, amendment and reconsideration of the Official Action of February 22, 2006 is respectfully requested by Applicant.

Summary

Claims 1 and 15 have been amended. No new matter has been added as a result of this amendment.

Claims 2 and 3 have been cancelled.

Rejections

Claims 1 – 2, 4, 6, 14 and 21 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha (U.S. Pat. No. 6,919,945) in view of Kim (U.S. Pat. No. 6,522,377). Claims 15 – 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ha, in view of Kim, further in view of Applicant's admitted prior art, figure 3. Claims 3 and 7 – 9 were objected to as being dependent upon a rejected base claim, but the Examiner noted "would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims."

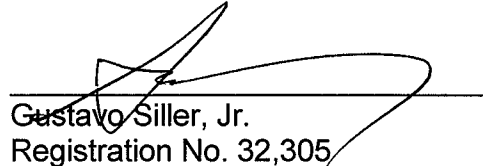
In regard to the rejections of Claims 1 – 2, 4, 6, 14 and 21 – 23 pursuant to 35 U.S.C. 103(a), Claim 1 was amended to include the limitations of dependent Claims 2 and 3. Claim 1 now includes the limitation of allowable Claim 3. Claim 1 is now allowable, without more, over the cited art.

Accordingly, Claim 1, as well as dependent claims 4, 6, and 14 – 23, is allowable over the cited art.

Conclusion

If the Examiner is unable to allow the application in the next Office Action and believes that a telephone interview would be helpful to resolve any issues, he is respectfully requested to contact the undersigned.

Respectfully submitted,



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